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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/742,128	12/19/2003	Ankur P. Panchbudhe	VRT0117US	5026

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EXAMINER
DOAN, DUC T

ART UNIT	PAPER NUMBER
2188	

DATE MAILED: 10/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/742,128	PANCHBUDHE ET AL.
	Examiner	Art Unit	
	Duc T. Doan	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>06 September 2005</u>.

2a)☒ This action is **FINAL.** 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>27-57</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>27-57</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 27-54 were pending in this application. In response to the last Office Action,

Claims 55-57 were added. As a result, claims 27-57 are remain pending in this application.

Claims 27-57 rejected.

Applicant's arguments filed 9/6/2005 have been fully considered but they are not

persuasive. Therefore, the rejections from the previous office action are respectfully maintained,

with changes as needed to address the amendments.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed

in the United States before the invention by the applicant for patent or (2) a patent granted on an application for

patent by another filed in the United States before the invention by the applicant for patent, except that an

international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

subsection of an application filed in the United States only if the international application designated the United

States and was published under Article 21(2) of such treaty in the English language.

Claims 27-57 rejected under 35 U.S.C. 102 (e) as being anticipated by Krishnamurthy

(US 6823436).

As for claim 27, Krishnamurthy describes a method comprising:

in response to a request to perform an operation on a storage area, wherein the storage area

comprises a plurality of locations: identifying a first set of locations of the plurality of locations

(Krishnamurthy's Fig 3: #36, extends of data from the source drive for snapshot copy operations;

column 4 lines 30-60), wherein each location in the first set of locations meets a criterion

(requirement) to be targeted by the operation (Krishnamurthy's column 4 lines 30-60 describe

extends of the data of the source drive are chosen to be copied over; It is inherently these extends

must meet the requirements to be copied over; Examiner further notes that the word criterion is

not defined in the specification); comparing the first set of locations to a second set of locations

(the claim's second set of locations corresponds to Krishnamrthy's regions of data specified in an

operation; Fig 5 column 5 lines 25-34 describes of matching the range of a subsequence update

write command with the locations of the current node; The locations of these update write will be

write to target drive as performed by the current snapshot operation. The range of data in the

update write command corresponds to the second locations in the claim; Examiner notes that the

word comparing is not found in the specification; the description of "comparing the first set of

locations to a second set of location" is not found in the specification) [In the topology depicted

in FIG. 7, a write operation to source drive at offset 1536 for an extent, for example, of 56 data

blocks; Krishnamrthy's column 6, lines 48-49]; and performing the operation (snapshot data)

upon a third set of locations in the storage area (Krishnamurthy's Fig 3: #36, snapshot data to

target drive in units of segments; column 4, lines 1-13).

As for claim 28, Krishnamrthy describes producing the third set of locations, wherein

each location in the third set is in both the first set of locations and the second set of locations

(Krishnamrthy describes data of source drive, destination drive, and of write operations are in any of volumes C, D, and E; column 4, lines 1-17).

As for claim 29, Krishnamurthy describes wherein the second set of locations is specified by an application program [Krishnamurthy's column 4, lines 13-15; the computer 12 accesses a software-implemented snapshot module 18 for undertaking the inventive steps of the process according to the present invention described herein; Krishnamurthy's column 3, lines 18-21].

As for claim 30, Krishnamurthy describes wherein the operation is replication (Krishnamurthy's column 3, lines 18-21).

As for claim 31, Krishnamurthy describes obtaining a set of entities, wherein the first set of locations comprises a plurality of subsets of locations (data blocks in an extent), and an entity (an extent) in the set of entities has permission to perform the operation on respective data in at least one of the plurality of subsets of locations [Krishnamurthy's column 4, lines 43-49; Krishnamurhty's column 5, lines 26-33].

As for claim 32, Krishnamurthy describes wherein the second set of locations is designated by a requester [During block 60 of the process of FIG. 5, metadata tree nodes like those of FIGS. 7 and 8 are scanned for the offset and extent of a requested write operation; Krishnamurthy's column 5, lines 26-28].

As for claim 33, Krishnamurthy describes obtaining a designation of the operation to be performed [If a node is found with a matching or overlapping range, as indicated at 64, a decision is made as indicated at 68; Krishnamurthy's column 5, lines 28-30].

As for claims 34-35, Krishnamurthy describes wherein the requester manages data in the storage area; wherein the requester performs a management function of a set of management

functions for the storage area [Subsequent read operations look to the bitmap B to determine whether the time t.sub.o data is available from the target drive, or should be obtained from the source drive; Krishnamurthy's column 7, lines 4-6].

As for claims 36-37, Krishnamurthy describes wherein the requester identifies a respective physical location in the storage area corresponding to each location of the second set of locations; wherein each location in the second set of locations is specified by a beginning location and a number of contiguous locations starting at the beginning location [Krishnamurthy's column 6, lines 1-3, lines 30-39].

As for claim 38, Krishnamurthy describes wherein the second set of locations is designated by a set of indicators, wherein the set of indicators comprises an indicator for each respective location of the plurality of locations (Krishnamurthy's column 6, lines 1-3), and each indicator of the set of indicators indicates whether the respective location for the indicator is included in the second set of locations (Krishnamurthy's column 5, lines 11-14].

As for claim 39, Krishnamurthy describes obtaining a fourth set of locations location of a second snapshot operation (Fig 4a: offset 728, extent 472); and performing a second operation (second snapshot/copy operation) on the fourth set of locations after the operation is performed on the third set of locations (Fig 4a: offset 0, extent 600; Krishnamurthy's column 4, lines 30-50; Krishnamurthy's column 6, lines 61-63).

As for claim 40, wherein the second set of locations is designated by the requester; and the operation and the second operation are designated by the requester (Krishamurthy's column 6, lines 61-63).

As for claim 41, Krishnamurthy describes wherein a sieve (a node) for the storage area comprises the operation, and each operation in the sieve is performed on the third set of locations if the sieve is specified [It is to be noted the Offset:Extent represented by each bit is implicit, and relative to that of the metadata node, and no storage except for the single bit itself is required; Krishnamurthy's column 6, lines 39-42].

As for claim 42, it rejected based on the same rationale as in claim 27.

As for claims 43,51 they rejected based on the same rationale as in claim 28.

As for claims 44,48,52 they rejected based on the same rationale as in claim 29.

As for claims 45,53 they rejected based on the same rationale as in claim 33.

As for claim 46, it rejected based on the same rationale as in claim 27.

As for claim 47, it rejected based on the same rationale as in claim 28.

As for claim 49, it rejected based on the same rationale as in claim 33.

As for claim 50, it rejected based on the same rationale as in claim 27. Krishnamurthy further describe the computer readable medium in column 3, lines 30-45.

As for claim 54, it rejected based on the same rationale as in claim 50.

As for claim 55, the claim recites comparing the first set of locations and the second set of locations identifies the third set of storage location. Krishnamurthy's column 5 lines 25-35 describes matching the range of extents in the write requests within the extents represented within the node located during the procedure of Fig 5: #64.

Claims 56,57 they rejected based on the same rationale as in claim 55.

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive. Examiner

respectfully traverses Applicant's arguments for the following reasons:

As to the remarks on pages 7-9 about first set, second set, third set of locations. They are

corresponding to the extend

A) First set of location. Krishnamurthy describes the extents of data of the source drive in a

snapshot operation (column 4 lines 40-50).

B) Second set of location. Krishnamurthy describes the range (extents) of data being changed

during the snapshot operation (column 5 lines 25-45).

C) Comparing. Examiner notes that the word comparing is not found in the specification; the

description of "comparing the first set of locations to a second set of location" is not found in the

specification. Krishnamurthy describes matching the range of the extents of data being changed

during the snapshot operation within the extent represented within the node located during the

procedure of Fig 7: #64. (Krishnamurthy's column 5 lines 25-32).

D) Third set of location. Extents of the target drive in the snapshot operation (Krishnamurthy's

Fig 3: #36, snapshot data to target drive in units of segments; column 4, lines 1-13)

E) The operation. Krishnamurthy describes the snapshot operation wherein extents of the source

drive are copied over to the target drives. The snapshot functions as the claim's replicate

operation. Kirshnamuthy describes using the bitmap to keep track the data being

updated/changed during the snapshot operation and after snapshot's time t0 (Fig 6 columns 5,6).

This is analogy to functions of the invention described in the specification page 4 paragraphs 11-

12.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

Kusters et al (US Pub 2004/0133602).

Lee et al (US 6564219).

Cochran et al (US 6907505).

Selkirk et al (US 6804755).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

Applicant's amendment filed 8/18/03 necessitated the new ground(s) of rejection

presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP

706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

When responding to the office action, Applicant is advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc T. Doan whose telephone number is 571-272-4171. The examiner can normally be reached on M-F 8:00 AM 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 571-272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin L. Ellis
Primary Examiner